

EPO - DG 1

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ART 34 ANDT

30. 12. 2004

AMENDED CLAIMS

(42)

5 1. Method for producing whey powder, comprising the steps of:
a) providing a whey concentrate with a dry matter content of
at least 45%,
b) crystallizing lactose which is present in the whey
concentrate,
10 c) finely dispersing the whey concentrate, and
d) drying the finely dispersed whey concentrate to form a whey
powder with sufficient free moisture for recrystallization, with
the aid of a drying gas,
wherein a heating step, in which the whey concentrate is held at
15 a temperature of at least 75°C, in particular at least 85°C, for
a time of between 5 seconds and 900 seconds, is carried out
between step a) and step b).

2. Method for producing whey powder, wherein said time is
20 between 0.25 minute and 5 minutes.

3. Method according to claim 1 or 2, characterized in that at
the end of the spray-drying step, the moisture content is
between 8% and 13%.

25 4. Method according to any preceding claim, characterized in
that in the heating step the whey concentrate is held at a
temperature of at least 75°C, in particular at least 85°C, for a
time of between 0.5 and 4 minutes.

30 5. Method according to one of claims 1-3, characterized in
that in the heating step the whey concentrate is heated to a
temperature of more than 90°C, but less than 110°C.

35 6. Method according to one of the preceding claims,
characterized in that in the heating step the whey concentrate
is held at a temperature of between 90 and 95°C for a time of
between 0.5 and 3 minutes.

7. Method according to one of the preceding claims, characterized in that prior to step b) a dry matter content of at least 55% is created in the whey concentrate.

5 8. Method according to one of the preceding claims, characterized in that the whey concentrate is a concentrate of whey permeate.

10 9. Method according to one of the preceding claims, characterized in that fine particles which originate from the drying step and are entrained with the drying gas are filtered with the aid of a filter.

15 10. Method according to one of the preceding claims, characterized in that steps c) and d) are carried out by means of a spray-drying process, in which the whey concentrate is atomized in a drying chamber and drying gas is passed through the atomized whey concentrate, with the spray-dried whey concentrate being collected as a powder and the drying gas being 20 discharged via a drying gas outlet.

25 11. Method according to claim 9 or 10, characterized in that auxiliary gas is fed to the discharged drying gas in a quantity and at a temperature and relative atmospheric humidity which are such that the combination of the discharged drying gas with entrained fine particles and the supplied auxiliary gas is outside the range in which the entrained fine particles are sticky.

30 12. Method according to one of claims 9-11, characterized in that dry particles are fed to the discharged drying gas.

35 13. Method according to claim 11 or 12, characterized in that the auxiliary gas and/or the dry particles are fed to an inlet, located in the vicinity of a drying chamber, of the drying gas discharge.

14. Device for producing whey powder as set forth in one of claims 1-13, comprising

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- feed means for providing a whey concentrate with a dry matter content of at least 45%;

- crystallization means connected to the feed means for crystallizing lactose which is present in the whey concentrate;

5 and

- a spray-drying device which is connected to the crystallization means and comprises a drying chamber having

- a whey concentrate supply, comprising dispersing means for finely dispersing the whey concentrate,

10 - a whey powder discharge,

- drying means, comprising a drying gas supply and a drying gas discharge,

wherein the feed means comprise heating means which are designed to hold the whey concentrate at a temperature of at least 75°C, 15 in particular at least 85°C, for between 0.25 and 5 minutes, and wherein the whey concentrate supply, the dispersing means and the drying means are designed to dry the whey concentrate to a powder with a moisture content of between 8% and 13%.

20 15. Device for producing whey powder according to claim 14, characterized in that the drying gas discharge comprises a filter for filtering out fine particles which are entrained with the drying gas.

25 16. Device according to one of claims 14-15, characterized in that the drying gas discharge comprises an auxiliary gas supply.

17. Device according to one of claims 14-16, characterized in that the drying gas discharge comprises an auxiliary supply of 30 dry particles.

35 18. Device according to claim 16 or 17, characterized in that the auxiliary gas supply and/or the auxiliary supply for dry particles are connected to an inlet, located at the drying chamber, of the drying gas discharge.